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P. WILLMANN
WINDOW CONSTRUCTION
Filed Feb. 10, 1932

1,904,110

2 Sheets-Sheet 1

FIG. 1.

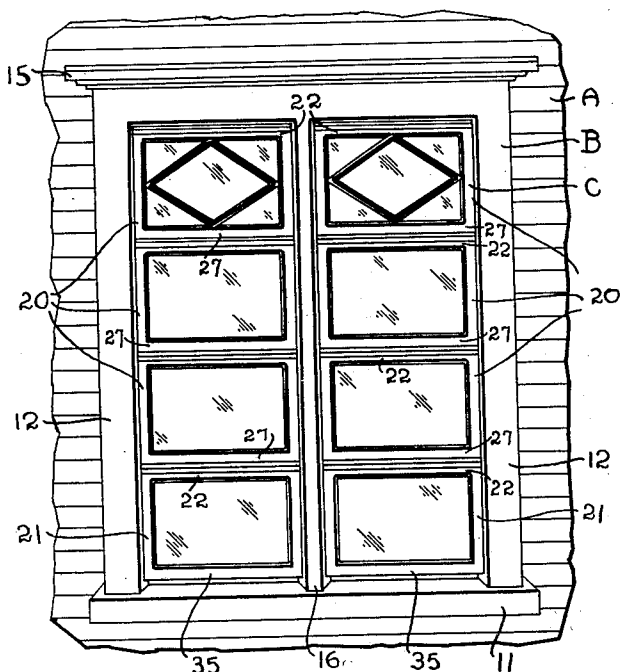


FIG. 2.

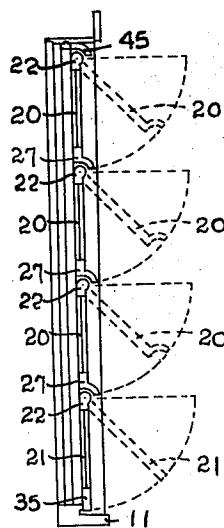


FIG. 5.

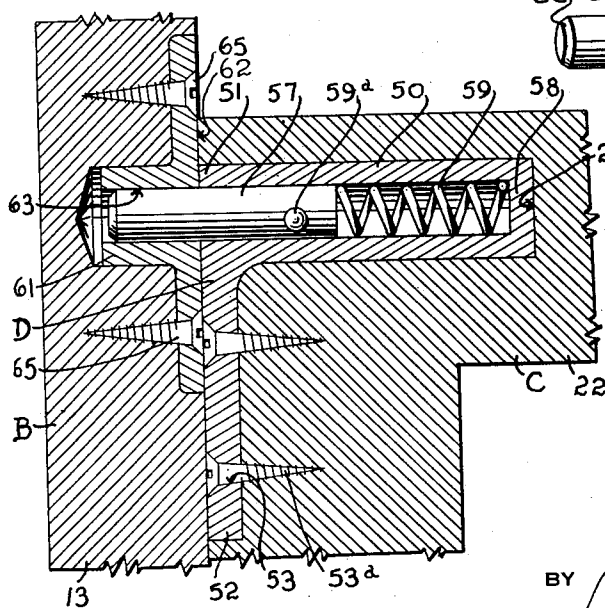
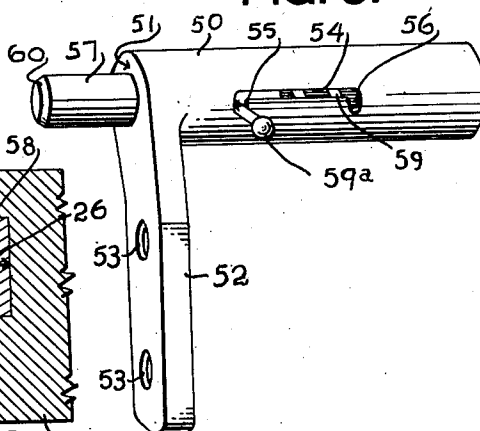


FIG. 6.



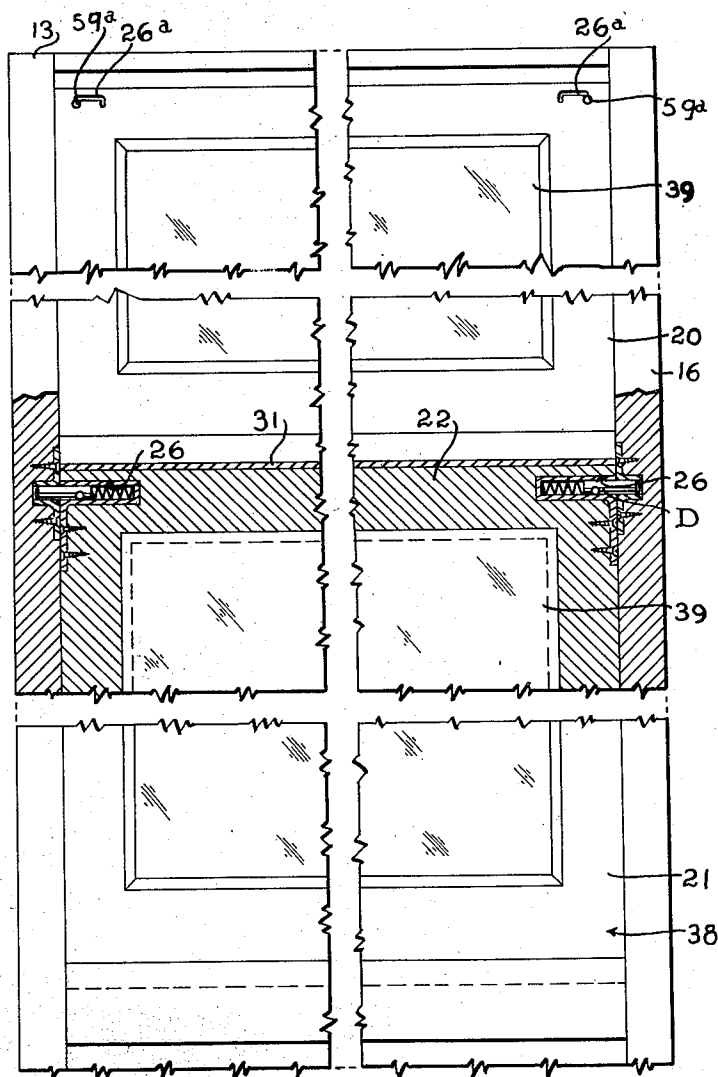
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FIG. 4.



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UNITED STATES PATENT OFFICE

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WINDOW CONSTRUCTION

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This invention relates to improvements in window construction and more particularly in casement window construction.

One great objection to the use of ordinary double-hung and casement windows is that it is difficult to render them secure against wind and rain, and in the case of ordinary casement windows, since the windows are usually hung on vertical pivots at their sides, the sashes must be heavier than for counter-balanced windows, because of the added strain. Double hung windows are relatively difficult to clean, the maximum area possible for ventilation is only one-half of the area of the windows and it is difficult to properly regulate ventilation when ordinary vertically pivoted casement windows are employed.

An object of this invention is to combine many of the advantages of the double-hung and casement windows in an improved window construction.

Another object of the invention is to provide a window construction having the outward appearance of either an ordinary double-hung window or a casement window but made up of a plurality of independently swingable sash sections.

Another object is to provide a window construction made up of a plurality of independently removable sash sections.

Still another object is to provide a window construction comprising a plurality of sash sections which may be quickly removed from the window frame, leaving the opening in the frame unrestricted.

Still another object is to provide a window construction which has the advantages of double hung windows but obviates the need of sash cords, weights, pulleys and the like.

Other objects and advantages of this invention will be apparent during the course of the following detailed description, taken in connection with the accompanying drawings, forming a part of this specification and in which drawings:—

Figure 1 is a perspective view of a window construction embodying the improvement, as viewed from the outside.

Figure 2 is a diagrammatic showing of

the improved window construction, the independent sash sections being shown in dotted lines as partly raised.

Figure 3 is a fragmentary vertical section thru the improved window construction.

Figure 4 is a fragmentary elevation of the improved window construction viewed from the inside, parts being broken away to better illustrate portions of the construction.

Figure 5 is a fragmentary cross sectional view of that portion of the improved window construction showing an improved pivoting device in place.

Figure 6 is a perspective view of the improved pivoting device shown in Figure 5.

In the drawings, wherein like reference characters designate similar parts thruout the views, A designates a portion of a building, B a window frame, C the improved window construction and D the novel pivoting device for the improved window construction.

The portion of the building A may comprise any part of such a structure, and it should be understood that the term "window" includes windows in doors and the like.

The window frame or casing B may include a sill 11, blind-hanging stiles 12, side stiles 13, taking the place of conventional pulley stiles, a window head 14, a cap member 15 and a mullion 16.

As for the improved window construction C, the same includes a plurality of independently pivoted sash sections 20 and 21, provided with novel rails. In the example shown, the upper rails 22 of both sections 20 and 21 are provided with transversely convexed portions 23 extending the length of the upper side of the rails. The pivotal axes of the sash sections are co-axial with the pivotal axes of their convex edges. It will be noted however, that these axes do not intersect the lateral medial line of the sash sections but are located so that the convex portions of the upper rails project beyond the remainder of the rail as shown at 24, while on the opposite side the convex portion merges into the remainder of the rail as shown at 25. At either end these upper rails are provided with sockets 26 and bayonet slots 26^a com-

communicating with the sockets, for a purpose later set out. The lower rails 27 of the sash section 20 overhang the upper rails of their adjacent sash sections as shown at 28 and this overhanging portion is provided with a concavity 28 extending the length of the lower side of the lower rails. The pivotal axes of these concavities are co-axial with the pivotal axes of the convex portion, but instead of the concavity extending transversely of the whole lower edge of the lower rails it merges into a rounded off portion shown at 30. Both the flat and concaved surfaces of the lower edges of the lower rails are covered by a suitable packing or weather stripping 31 shaped to conform to the convex surfaces of the upper rail 22 and the rounded surfaces of the lower rail 27. The packing which may be of rubber may be suitably secured to the lower edges of the lower rails as by screws 32 or the like. The lower rail 35 of each sash section 21 is preferably flat at its extremity 36 and both its outer and inner faces 37 and 38 are flat as shown in Figure 3, and this rail is preferably not provided with a packing. The central opening in each sash is, of course, provided with a pane of glass 39 or other covering for the opening, secured in place by any approved means.

As an additional means for excluding air etc., and providing a stop for the sash sections, a packing 40 is provided secured as with a backing strip 41 and screws 42 to the side stiles 13 of the window frame B as shown in Figure 3. If the mullion 16 is included in the frame structure, additional packing 40, backing strips 41 and screws 42 are provided to be similarly secured to the mullion.

These individual sash sections may be of wood, wood and metal, or entirely of metal since they are individually small and comparatively light in weight even if of metal and can be handled readily.

From Figure 3 it will be noted that a socket member 45 and associate packing 46 is secured to the window head 14 providing a socket for the uppermost sash section.

Now as for the novel pivoting device D, the same includes an elongate tubular member or housing 50, open at one end 51 and from which end extends radially an attaching wing 52 provided with perforations 53 to accommodate screws 53^a or the like for the purpose of securing the device to the sash section. This wing 52 has its outer surface flush with the end of the housing 50. The housing is slotted longitudinally by a bayonet slot 54 having lock slots 55 and 56. A pivot pin 57 is loosely carried in the tubular member and has a length less than the length of the bore of the tubular member so that between the closed end 58 of the latter and the inner end of the pin 57, a coil spring 59 or the like may be positioned

to bear against the end 58 and pivot pin 57 and urge the latter outwardly so as to project thru the open end 51 of the tubular member. A handle or pin 59^a or the like may be secured as by screw threads to the pivot pin to extend radially therefrom and project thru the slot 54 for the purpose of manipulating the pivot pin in connection with the slot, as is obvious. It is preferred that the outer end of the pivot pin be chamfered as at 60. Two of these devices are secured to each sash section by inserting the tubular member 50 into each of the sockets 26 in the sash sections with a pin 59^a projecting thru each bayonet slot 26^a in a sash section, with the slot 26^a aligning with the bayonet slot in the tubular member. As heretofore stated, the device may be secured to the sash sections by means of the wing 52 and screws 53^a, so that the outer surface of the wings will be flush with the ends of the sash sections. These pivot pins 57 are adapted to extend into bearing members 61 which may be carried by the side stiles 13 or mullion 16, with the outer end 62 of the bearing members flush with the outer surfaces of the stiles and mullion. Each bearing member is provided with a socket 63 communicating with the outer surface, and receiving the end of the pivot pin. The bearing members 61 may be secured to the stiles and mullions as by screws 64 or the like, all as shown in Figure 5.

In assembling the independent sash sections after the bearing members 61, the socket member or members 45 and the packing 40 is in place, the pivot pins 57 are manipulated so as to retract them by means of the handle or pins 59^a and bayonet slot, and the sash sections inserted between opposed side stiles or a side stile and a mullion and when the openings in the members 50 and 61 align, the pivot pins are released and the ends projected into the bearings by the springs 59. The pivot pins may be retracted and the individual sash sections quickly removed when desired.

It will be seen, particularly from Figures 2 and 3, that the individual sash sections may be swung on their pivots but that when the sections are down or closed, the packings 46, 31 and 40 will exclude air and the like. Any suitable means may be provided to lock the individual sash sections in any position desired, and the individual sash sections may be manipulated in any way desirable such as opening the lowermost sash and the uppermost sash sections to create a draft. In cleaning the window, the individual sash sections may be removed one by one and cleaned or the outer sides of the panes may be cleaned thru the opening provided by swinging open the sash immediately above that one to be cleaned.

Various changes may be made to the form

of invention herein shown and described, without departing from the spirit of the invention or the scope of the following claims.

5 What is claimed is:

1. In a window construction, a window casing and a pair of independent sash sections pivoted thereto, with the rail of one sash section provided with an arcuate socket, said
10 rail overhanging the rail of the adjacent sash section, said last named rail provided with an arcuate portion co-axial with the pivot of its sash section, accommodated in said socket.

2. In a window construction, a casing and
15 a plurality of independent sash sections pivoted thereto, with the rails of the free ends of intermediate and end sash sections providing sockets for the rails of the pivoted ends of adjacent sash sections.

3. In a window construction, a casing and
20 a plurality of independent sash sections pivoted thereto, the free ends of intermediate and an end section, with the pivoted ends of adjacent sash sections provided with sockets
25 pivotally carried in said sockets.

4. In a window construction, a pivotally mountable sash section provided with a rail having a transversely convex edge with the
30 pivotal axis of said sash co-axial with the axis of said convex edge, said sash section also having a transversely concave edge opposite said convex edge, with the degree of concavity substantially that of the degree of concavity of said first named edge.

5. In a window construction, a sash section provided with a rail having a transversely
35 convex edge and an opposite rail having a transversely concaved edge, and packing disposed along said transversely concaved
40 edge.

6. In a window construction, a casing and a plurality of independent sash sections pivoted thereto, with the rails of the free ends
45 of intermediate and end sections providing concave sockets and the opposite rail of each section provided with a convex portion co-axial with the pivot of its sash section, snugly accommodated in any one of
50 said sockets, whereby any selected sash section may be swung on its pivot independently of any other sash section.

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